

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



22 APR 2005



(43) International Publication Date  
6 May 2004 (06.05.2004)

PCT

(10) International Publication Number  
WO 2004/037959 A1

- (51) International Patent Classification<sup>7</sup>: C10M 173/00, 125/26
- (21) International Application Number:  
PCT/US2003/033728
- (22) International Filing Date: 24 October 2003 (24.10.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/421,181 25 October 2002 (25.10.2002) US
- (71) Applicant (for all designated States except US): UNIVERSITY OF CHICAGO [US/US]; 5801 South Ellis Avenue, Chicago, IL 60637 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): ERDEMIR, Ali [US/US]; 2227 Stowe Circle, Palos Hills, IL 60465 (US). SYKORA, Frank [CA/CA]; 20030 Horseshoe Hill Road, Caledon, Ontario L0N1C0 (CA). DORBECK, Mark [US/US]; 4204 Pleasant Valley Road, Brighton, MI 48114 (US). JONES, Antonio, Ortega [MX/MX]; Mollendo No. 638, 07300 Colonia Lindavista (MX).
- (74) Agents: BROWN, Marshall, J. et al.; Foley & Lardner, 321 North Clark Street, Suite 2800, Chicago, IL 60610-4764 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

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(54) Title: IMPROVED METALWORKING AND MACHINING FLUIDS

(57) Abstract: Improved boron-based metal working and machining fluids. Boric acid and boron-based additives that, when mixed with certain carrier fluids, such as water, cellulose and/or cellulose derivatives, polyhydric alcohol, polyalkylene glycol, polyvinyl alcohol, starch, dextrin, in solid and/or solvated forms result in improved metalworking and machining of metallic work pieces. Fluids manufactured with boric acid or boron-based additives effectively reduce friction, prevent galling and severe wear problems on cutting and forming tools.

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US03/33728

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : C10M 173/00, 125/26  
US CL : 508/185

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 508/185

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EAST

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2,578,585 A (OROZEO et al.) 11 December 1951, see entire document.	1-11, 13-22
X	US 4,257,902 A (SINGER) 24 March 1981, see entire document.	1-22
X	US 5,468,401 A (LUM et al.) 21 November 1995, column 8, lines 18-35.	23
Y	US 5,507,962 A (JAHANMIR et al.) 16 April 1996, see entire document.	1-22
X	US 5,512,191 A (KRUEGER) 30 April 1996, see entire document.	1-22
X	US 5,547,595 A (HACIAS) 20 August 1996, see entire document.	1-11, 13-22
X	US 6,194,357 B1 (MURATA et al.) 27 February 2001, see entire document.	1-11, 13-22

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Date of the actual completion of the international search

16 March 2004 (16.03.2004)

Date of mailing of the international search report

05 APR 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Jerry D. Johnson

Telephone No. (571) 272-1448